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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/713,240

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Khaled El-Maleh

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QUALCOMM INCORPORATED
5775 MOREHOUSE DR.
SAN DIEGO, CA 92121

EXAMINER

VO, TUNG T

ART UNIT

PAPER NUMBER

2621

NOTIFICATION DATE

DELIVERY MODE

04/15/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com
kascanla@qualcomm.com
nanm@qualcomm.com

Office Action Summary	Application No. 10/713,240	Applicant(s) EL-MALEH ET AL.	
	Examiner Tung Vo	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/13/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/02/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. The restriction dated 01/04/08 is improper, therefore the restriction is withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 12, 23-24, and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Chung et al. (US 6,421,386).

Re claims 1-3, 12, 23-24, and 26-28, Chung discloses apparatus for carrying out a method for selectively reducing the processing cycles of a video codec (fig. 2), comprising: a first complexity control element (13 of fig. 2) configured to use texture information of a current macroblock to determine whether to nonpredictively encode the current macroblock (Intra coding mode of the current macroblock is selected); and a second complexity control element (14 of fig. 2) configured to use motion information of the current macroblock to determine whether to predictively encode the current macroblock (Inter coding mode of macroblock is selected); wherein the texture information comprises texture bits (texture information bitstream); and wherein variance values of the portion (13 of fig. 2, calculation of variance) are used to determine the texture information.

4. Claims 1-5, 12-24, and 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al. (US 7,280,597).

Re claims 1 and 12, Zhang discloses a method for categorizing a portion of a video frame (macroblocks of a frame), comprising: using texture information (col. 5, lines 44-47) in the portion to determine whether the portion comprises at most a predetermined amount of spatial information (320 of fig. 3); and

if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, then categorizing the portion as nonpredictive (380 of fig. 3, intra mode when no motion compensation (MC) mode).

Re claim 2, Zhang further discloses wherein the texture information comprises texture bits (R, 320 of fig. 3).

Re claim 3, Zhang further discloses wherein variance values of the portion of the video frame are used to determine the texture information (320 and 321 of fig. 3).

Re claim 4, Zhang further discloses wherein the predetermined amount of spatial information is an average variance value of at least another video frame (320 and 321 of fig. 3, col. 7, lines 15-40).

Re claim 5, Zhang further discloses wherein the predetermined amount of spatial information is a scaled average variance value of at least another video frame (340 of fig. 3).

Re claim 13, Zhang further teaches wherein using texture information of the current macroblock to determine whether to nonpredictively encode the current macroblock comprises (381 of fig. 3, selecting intra mode):

determining a variance value of the current macroblock (320 of fig. 3);
comparing the variance value of the current macroblock to a scaled variance value of a macroblock from at least one other video frame (380 of fig. 3); and
if the variance value of the current macroblock is less than the scaled variance value of the macroblock from at least one other video frame, then determining to nonpredictively encode the current macroblock (intra mode is selected when there is no motion).

Re claim 14, Zhang further teaches wherein the scaled variance value of the macroblock from at least one other video frame is a scaled average variance (col. 7, lines 15-40).

Re claim 15, Zhang further discloses wherein using motion information of the current macroblock to determine whether to predictively encode the current macroblock comprises:
determining pixel differences between the current macroblock and a macroblock from another video frame (ME, 310 of fig. 3); and if the pixel differences between the current macroblock and the macroblock from another video frame is less than a configurable threshold value (motion estimation compare to a threshold; for example, for P-type frame picture, there are three inter modes: field 111, frame 113, and dual motion vector (DMV) 112. If the SAD of field mode is the smallest of the three, then field mode is selected as the best inter mode 118. The best inter mode is then compared with intra mode 121 and a mode that just copies the co-positional MB of the previous frame (MV=0) 122 as the prediction), then determining to predictively encode the current macroblock with enhanced accuracy (380 of fig. 3, selecting macroblock for motion compensation, 360 of fig. 3).

Re claim 16, Zhang further discloses wherein using motion information of the current macroblock to determine whether to predictively encode the current macroblock (310 of fig. 3)

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comprises: determining a sum of absolute distance values between the current macroblock and macroblocks from at least one other video frame (SAD 230, 351 of fig. 3); and if the sum of absolute distance values is less than a scaled average minimum sum of absolute distance values of macroblocks from at least one other video frame (For example, for P-type frame picture, there are three inter modes: field 111, frame 113, and dual motion vector (DMV) 112. If the SAD of field mode is the smallest of the three, then field mode is selected as the best inter mode 118. The best inter mode is then compared with intra mode 121 and a mode that just copies the compositional MB of the previous frame (MV=0) 122 as the prediction), then determining predictively encode the current macroblock with enhanced accuracy (380 of fig. 3).

Re claim 17, Zhang further discloses wherein the scaled average minimum sum of absolute distance values is configurable (381 of fig. 1).

Re claim 18, Zhang discloses method for selectively reducing processing cycles of a video codec (fig. 3), comprising: receiving a configuration signal (301 of fig. 3); and

configuring at least one variable within a complexity control algorithm in accordance with the configuration signal (310 and 320 of fig. 3), wherein the complexity control algorithm is for selectively increasing the number of nonpredictively encoded portions of a predictive video frame based upon texture information (340, 380, and 360 of fig. 3).

Re claim 19, Zhang further discloses wherein the configuration signal conveys image size information (R, 332 of fig. 3).

Re claim 20, Zhang further discloses wherein the configuration signal conveys transmission frame rate information (331, 330, and 390 of fig. 3).

Re claim 22, Zhang further discloses wherein the configuration signal conveys information regarding available hardware resources (MPEG-2 hardware has its own specification for compression).

Re claims 23-24 and 26-28, Zhang further teaches apparatus for selectively reducing the processing cycles of a video codec (fig. 3), comprising: a first complexity control element (310 of fig. 3) configured to use texture information of a current macroblock to determine whether to nonpredictively encode the current macroblock; and a second complexity control element (MC, 360 of fig. 3) configured to use motion information of the current macroblock to determine whether to predictively encode the current macroblock.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 6-8, 11-12, and 18-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 6,108,449).

Re claims 1-3, 6, 12, 18, Sekiguchi teaches apparatus for categorizing a portion of a video frame (2 and 9 of fig. 1 are portion of frame, texture and shape, fig. 26), comprising: at least one memory element; and at least one processing element configured to execute a set of instructions stored in the at least one memory element, the set of instructions comprising:

using texture information (9 of fig. 1) in the portion to determine whether the portion comprises at most a predetermined amount of spatial information (10 and 14 of fig. 1);

if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, then categorizing the portion as nonpredictive (9 of fig. 1, the intra texture information is selected by texture encoding unit 18);

if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information (13 and 17 of fig. 1, wherein motion compensation 12 and 16 perform prediction that would obviously determine inter or intra encoding mode), then: performing a motion estimation search (10 and 14 of fig. 1);

using motion information determined during the motion estimation search to determine whether the portion comprises at least a predetermined amount of predictive information (12 and 16 of fig. 1, the predicting result 13 and 17 of fig. 1);

if the motion information indicates that the portion comprises at least the predetermined amount of predictive information, then categorizing the portion as predictive (note the motion compensation unit (12 and 17 of fig. 1) obviously determine the macroblock is inter as predictive portion); and

if the motion information indicates that the portion does not comprise at least the predetermined amount of predictive information, then categorizing the portion as nonpredictive (12 and 17 of fig. 1, intra as non-predictive portion).

Re claim 7, Sekiguchi further discloses wherein the texture information comprises texture bits (9 of fig. 1).

Re claim 8, Sekiguchi further discloses wherein variance values of the portion of the video frame (10 and 14 of fig. 1) are used to determine the texture information (13 and 17 of fig. 1).

Re claim 11, Sekiguchi further teaches wherein motion information comprises pixel differences between the portion of the video frame and at least another portion of at least another video frame (10 of fig. 1, frame based motion detecting unit).

Re claim 19, Sekiguchi further discloses wherein the configuration signal conveys image size information (fig. 26).

Re claim 20, Sekiguchi further discloses wherein the configuration signal conveys transmission frame rate information (18 of fig. 1).

Re claim 21, Sekiguchi further discloses wherein the configuration signal conveys a user command (texture signal would obviously be a user command within a picture).

Re claim 22, Sekiguchi further discloses further discloses wherein the configuration signal conveys information regarding available hardware resources (MPEG hardware has it own specification for compression).

Re claims 23-24 and 26-28, Sekiguchi further teaches apparatus for selectively reducing the processing cycles of a video codec (fig. 1), comprising: a first complexity control element (10 and/or 14 of fig. 1) configured to use texture information of a current macroblock to determine whether to nonpredictively encode the current macroblock (Intra coding mode of the current macroblock is selected); and a second complexity control element (12 and/or 16 of fig. 1) configured to use motion information of the current macroblock to determine whether to predictively encode the current macroblock (Inter coding mode of macroblock is selected).

7. Claims 4-5, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 6,108,449) in view of Zhang et al. (US 7,280,597).

Re claims 9 and 10, Sekiguchi does not particularly teach wherein the predetermined amount of spatial information is an average variance value of at least another video frame; wherein the predetermined amount of spatial information is a scaled average variance value of at least another video frame as claimed.

However, Zhang teaches wherein the predetermined amount of spatial information is an average variance value of at least another video frame (320 of fig. 3, col. 7, lines 15-40); wherein the predetermined amount of spatial information is a scaled average variance value of at least another video frame (340, 341, and 380 of fig. 3).

Taking the teachings of Sekiguchi and Zhang as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Zhang into the method of Sekiguchi to significantly reduce complexity, while maintaining high coding efficiency.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ryoo (US 5,990,957) discloses video signal bit amount control using adaptive quantization.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tung Vo/

Primary Examiner, Art Unit 2621